



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/552,576	04/19/2000	William J. Oswald	9840-041-999	3976

24341 7590 02/24/2003

Pennie & Edmonds, LLP
3300 Hillview Avenue
Palo Alto, CA 94304

EXAMINER

BARRY, CHESTER T

ART UNIT	PAPER NUMBER
----------	--------------

1724

DATE MAILED: 02/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/552,576

Applicant(s)

OSWALD ET AL.

Examiner

Chester T. Barry

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,15,16,25-27 and 34-76 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 2,15,16,25-27 and 34-76 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.

- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Claims 2, 34 are rejected under 35 U.S.C. §102(b) as anticipated by USP 4997568 to Vandervelde.

Vandervelde '568 at Fig. 2 describes a structure comprising an outer pond (defined by sand layer 20) larger in area and overlaying an anaerobic inner pond (layers 13 – 19). The skilled artisan would have understood that methane fermentation necessarily takes place at least at layer 13. Wastewater is fed through pipe 10 to the apex of the structure at the bottom of the anaerobic methane fermentation pit. Housing 29 is optional. The pond is "substantially open" insofar as the surface of the liquid contained by the outer pond is exposed to ambient air and light.

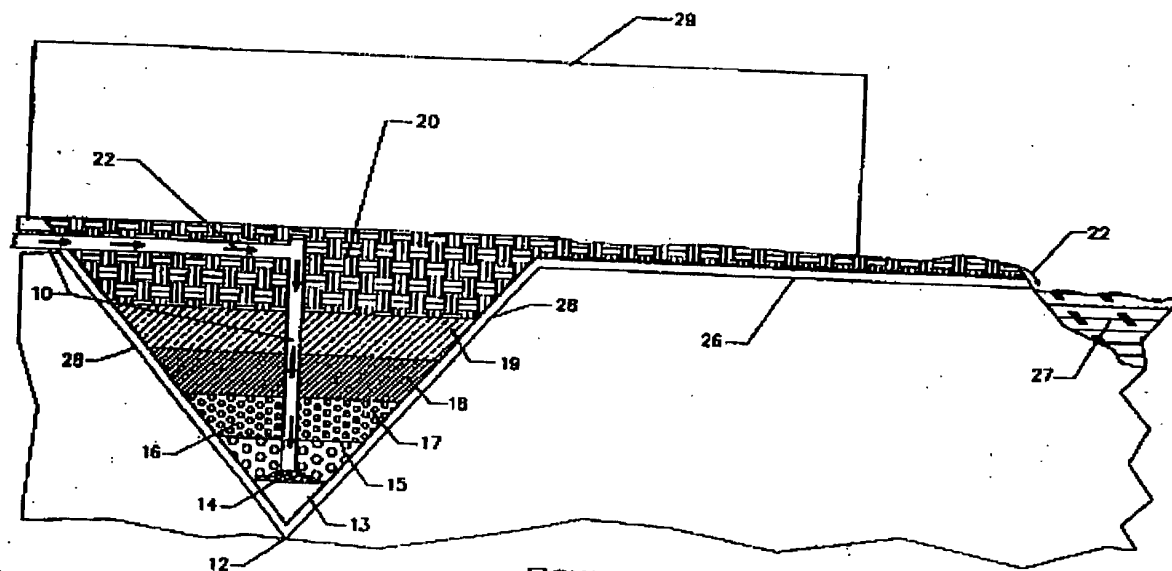
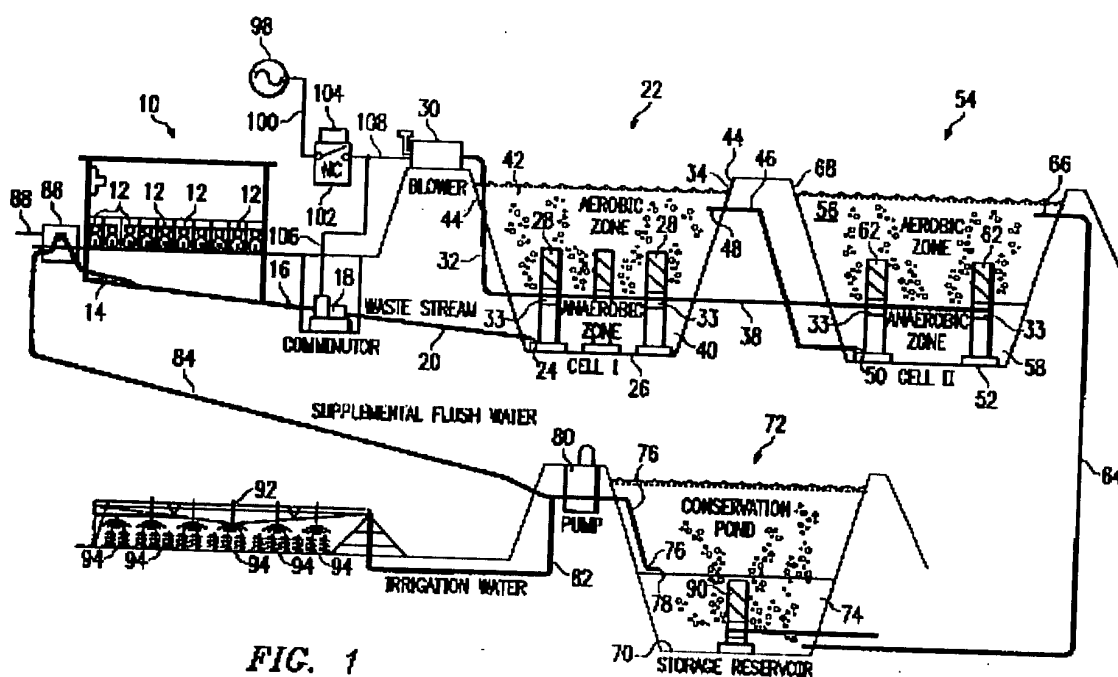


FIGURE 2

Similarly, claims 2, 34 are rejected under 35 U.S.C. Sec. 102(e) as anticipated by USP 6203702 to Sheaffer. Sheaffer describes a pond (cell I) comprising a lower anaerobic zone and an upper (overlying) aerobic zone. Waste feed is fed to the anaerobic zone by a pipe 20. The skilled artisan would have understood that methane is necessarily generated in the anaerobic zone.



Claims 2, 15, 26 are rejected under 35 U.S.C. Sec. 102(b) as anticipated by USP 5616241 to Khudenko. Khudenko describes a pond (fig 8 or fig. 14) having a lower anaerobic methanogenic zone and an upper zone overlying the methanogenic zone. The pond is a vessel having a substantially open surface because methane and other gases can escape therefrom via submerged gas collector 37 (fig 14) and gas bell (conduit) 33, 34.

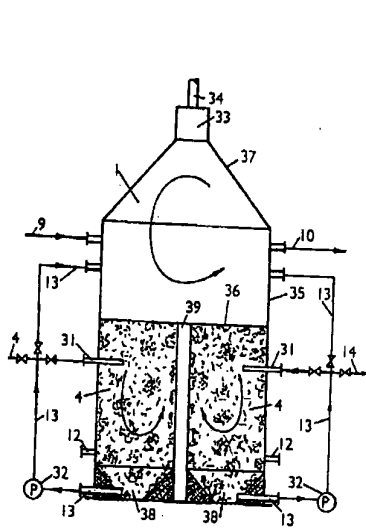


FIG. 8

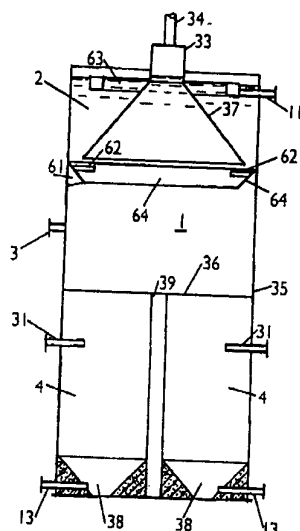
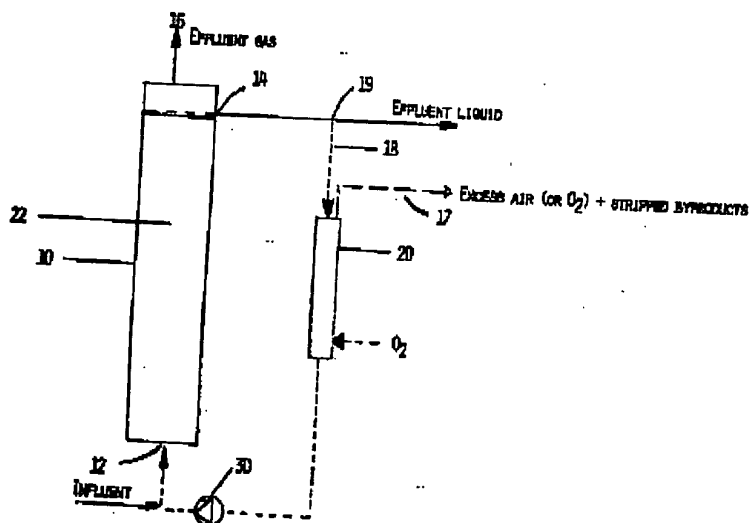


FIG. 14

USP 5500306 to Hsu suggests using collected biogas from an anaerobic digester to generate electric power. It would have been obvious therefore to have done so with the gas from Khudenko's process. Accordingly, claim 16 is rejected under 35 U.S.C. §103(a) as obvious over Khudenko and Hsu.

Claims 2, 34 are rejected under 35 U.S.C. Sec. 102(b) as anticipated by USP 5599451 to Guiot. Guiot describes a vessel type pond 10 having a lower anaerobic methanogenic zone and an upper zone overlying the methanogenic zone. The vessel has a substantially open surface because methane and other gases can escape therefrom via 16.



Claims 2, 15, 16, 25 – 27, 34 – 76 are rejected under 35 U.S.C. Sec. 102(b) as clearly anticipated by co-applicant Oswald's prior publication: F. B. Green, T. J. Lundquist and W. J. Oswald, "Energetics of advanced integrated wastewater pond systems," Water Science and Technology Vol 31 No 12 pp 9-20 (c) IWA Publishing, 1995.

Green et al. describes a facultative pond, a second generation Advanced Integrated Wastewater Pond System (AIWPS) prototype at the University of California, Berkeley, Environmental Engineering and Health Sciences Laboratory in Richmond, California. Modifications made to the existing 1.8 ML facultative pond optimized methane fermentation. Methane was recovered using a submerged gas collector. The feasibility of submerged gas collection was proven. Biogas methane concentrations increased by more than 50% as the biogas emerged through the overlying water column and most of the carbon dioxide fraction was utilized by microalgae. Two 0.1 hectare algal High Rate Ponds (HRPs) are described.

F. B. Green, L. Bernstone, T. J. Lundquist, J. Muir, R. B. Tresan and W. J. Oswald, "Methane fermentation, submerged gas collection, and the fate of carbon in advanced integrated wastewater pond systems," Water Science and Technology Vol 31 No 12 pp 55-65 (c) IWA Publishing, 1995, is cited of interest.

Y Nurdogan and W. J. Oswald, "Enhanced Nutrient removal in high rate ponds," Water Science and Technology Vol 31 No 12 pp 33-43 (c) IWA Publishing, 1995 is cited of interest.

Claim 25 is rejected under 35 USC §102 as anticipated by any one of Vandervelde '568, Sheaffer, Khudenko, Guiot, and Oswald for the reasons stated above, further in view of the recognition that biogas from anaerobic digesters is typically about 70% (by vol) methane. See col 5 line 2 of Kanitz

Claim 27 is rejected under 35 USC 103(a) as unpatentable over Vandervelde '568 and Kanitz, Sheaffer and Kanitz, Khudenko and Kanitz, Guiot and Kanitz, or Oswald and Kanitz, further in view of Hsu. USP 5500306 to Hsu suggests using collected biogas from an anaerobic digester to generate electric power. It would have been obvious therefore to have done so with the biogas described in the primary references.

Claims 34 – 49 and 65 – 76 are rejected under 35 U.S.C. Sec. 112, 2nd parag., for failing to particularly point out and distinctly claim the subject matter for which patent protection is sought. It is unclear what "substantially open surface" means. For example, does Vandervelde '568's embodiment having an optional structure 29 enclosing a portion of the surface of the uppermost liquid surface have a "substantially open surface"? At Fig. 2, the portion of the surface to the right of the enclosure 29 is clearly an "open" surface. It is unclear if the portion within the enclosure is "substantially open." USP 212023 shows a multizone pond having a substantially open surface. USP 6174433 to Futami describes an anaerobic digester having a "substantially open

surface" because a) it is exposed to ambient air admitted through vent 6 and b) because light is admitted via light transmitting cover 9.

USP 2683444 to Kappe describes an anaerobic digester submerged gas collector.

USP 5011604 to Wilde is cited for teaching the depth in multi-zone ponds at which photosynthetic algae thrive (<3 meters) (col 3 line 68).

USP 3933628 to Varani describes an outer (upper) pond (above layer 26), a lower inner anaerobic biogas-generating pond, a submerged central biogas collection vent 48, and a surface 28 that is substantially open. Waste is fed into the methane fermentation zone, as shown by Fig 4 (waste pipe 66).

USP 4005546 to co-applicant Oswald, and assigned to the assignee of this application, is cited of interest for teaching multiple zone wastewater treatment.

As indicated by National Geographic, it was known in this country in 1941, i.e., before applicants made their invention, for a human to position himself within the canopy of a gas collecting air trap at the bottom of an outer pond, i.e., Wakulla Springs, the source of the Wakulla River in Florida. The human inherently contains a methane fermentation zone, as shown by USP 5922317 to Kayar col 4 lines 20 – 30. Excess methane generated in the large intestines of the human is released as flatus. It is unclear

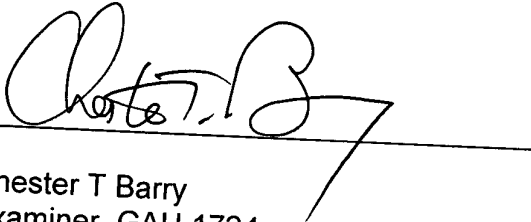
Application/Control Number: 09/552,576

Art Unit: 1724

Page 9

whether any such flatus was collected by the air trap while the swimmer was positioned as depicted in the photo. The bubbles leaving the air trap appear to be that of air admitted by the air hose beneath the female swimmer. Further, it is unclear whether any water was admitted to the swimmer's large intestine from his small intestine while he was within the larger pond.

Respectfully,

A handwritten signature in black ink, appearing to read "Chester T. Barry", is written over a horizontal line. The signature is stylized with large, flowing letters.

Chester T Barry
Examiner, GAU 1724
US PTO
703-306-5921